

Laparoscopic Total Extraperitoneal Repair in Femoral Hernia Without Fixation of the Mesh

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ABSTRACT

Background & Objectives: We report on laparoscopic total extraperitoneal repair without fixation of mesh for femoral hernia in 6 patients.

Methods: During a 3-year period, laparoscopic total extraperitoneal repair of femoral hernia was performed without mesh fixation in 6 patients. The recurrence rate, pain scores, hospital stay, and other morbidity parameters were noted. Pain scores were 1=no pain, 2=mild pain, 3=moderate pain, 4=severe pain, and 5=intolerable pain.

Results: All 6 patients were females and had unilateral hernias. Mean age was 33.8 ± 18.6 years, and follow-up ranged from 12 months to 36 months. Four patients were operated on while under spinal anesthesia, and 2 patients were operated on while under general anesthesia. Mean operating time was 29.2 ± 10.7 minutes. The mean pain scores 24 hours and the first week after operation were, respectively, 2.33 ± 0.52 and 1.33 ± 0.52 . Mean hospital stay was 1.17 ± 0.41 days, and mean days to resumption of normal activities were 8.5 ± 2.1 days. No patient had urinary retention or seroma formation in the postoperative period. At follow-up, no hernia had recurred.

Conclusions: Laparoscopic femoral hernia repair without fixing the mesh is safe, feasible, and associated with minimal morbidity and recurrence rates.

Key Words: Hernia, Recurrence, Laparoscopic, Open, Seroma.

INTRODUCTION

Femoral hernia is a relatively rare form of herniation. Of all the groin hernias that occur in the general population, it comprises 2% to 8% of them¹⁻³ and 30% in females.⁴ Femoral hernia is associated with a high incidence of incarceration, omental and intestinal necrosis, and higher morbidity and mortality.^{4,5} An obstruction and strangulation rate of up to 30% to 86% has been reported in the literature,^{1,4,6} and in these complicated cases, mortality rates can be as high as 10%.⁷⁻⁹

Though conventionally, femoral hernia has been managed by open surgical methods,^{1,4,10-13} of late laparoscopic management by transabdominal preperitoneal repair (TAPP)^{2,14,15} and total extraperitoneal repair (TEP)¹⁶ has become popular. The need to fix the mesh, requirements for general anesthesia, and the high cost are some the disadvantages of laparoscopic repair. Laparoscopic inguinal hernia being done with spinal anesthesia^{17,18} and without fixation of mesh^{19,20} has been reported in the literature, but as per our search, there have been no such reports for femoral hernia. We present our experience with 6 patients with femoral hernia treated without fixation of mesh, 4 patients under spinal anesthesia and 2 under general anesthesia.

METHODS

Six of 940 patients (1760 hernia repairs) who underwent laparoscopic femoral hernia repair between January 2005 and September 2007 at a single large rural hospital in South India were included in the study.

The recurrence rate, pain scores at 24 hours and 1 week, hospital stay, days to resumption of normal activities, presence of pain at 4 weeks, seroma formation, and urinary retention rates were noted. Pain scoring was reported as 1=no pain, 2=mild pain, 3=moderate pain, 4=severe pain and 5=intolerable pain.

Patient Selection

All reducible femoral hernias were included in the study. A hernia, which was irreducible clinically, was reduced after the patient was given anesthesia. Exclusion criteria

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were hernia irreducible even after anesthesia, obstructed and strangulated hernias, pediatric hernias, and patients with inguinal hernia associated with other hernias like ventral hernias.

Spinal Anesthesia (SA)

Pentazocine 50 mg and Phenergan 12.5 mg were injected intramuscularly, 30 minutes before the start of surgery. Spinal anesthesia was given using a 26 G or 27 G needle in the L2–3/3–4 space with 4 mL of 0.5% Bupivacaine. The spinal anesthesia was supplemented with injection of Midazolam, ketamine, or both, as needed.

TEP (Totally Extraperitoneal Repair)

The patient was kept in a supine position. The operating surgeon and the first assistant (camera person) stood on the opposite side of the hernia. Two monitors were used.

A 1-cm to 2-cm subumbilical incision was made. The right rectus sheath was identified. A 1-cm vertical incision was made over the right rectus sheath. The rectus muscle was retracted laterally, and the space between the rectus muscle and posterior rectus sheath was enlarged with a piece of gauze so as to insert a 10-mm port cannula. With the CO₂ insufflation connected, the telescope was introduced through the 10-mm port, and a space was created in the midline to reach the pubic ramus. Two 5-mm ports were then inserted in the midline, one between the umbilicus and the pubic symphysis and the other one just above the pubic symphysis. The femoral hernia was identified in the femoral triangle. After reducing the sac, the inferior epigastric vessels were identified. The internal ring was then identified just lateral to inferior epigastric vessels. After this, the peritoneum was reflected laterally till the anterior

superior iliac spine. Posteriorly, the peritoneum was reflected till the point where the round ligament turns medially. A 15-cm x10-cm size piece of polypropylene mesh was inserted into the preperitoneal space through the 10-mm port. The mesh was placed, without wrinkle, covering all the facial defects in the groin, Hesselbach's triangle, indirect ring, femoral triangle, and obturator ring to prevent other hernias. The mesh was not fixed. A redivac drain (12F) was kept as per the assessed requirement, and the space was deflated taking care not to displace the mesh.

An intramuscular injection of Diclofenac was given 4 hours after the procedure. Three injections of the antibiotic Ceftriaxone were given in the postoperative period. In case the drain had been installed, it was removed 12 hours after surgery. The patient was discharged 24 hours after surgery on a course of oral antibiotics (oral cephalosporin) for 5 days.

RESULTS

All patients (n=6) had unilateral hernia and all were females. Mean age was 33.8±18.6 years, and follow-up ranged from 12 months to 39 months (mean, 23). All surgeries were elective, and none was for a recurrent hernia. All patients underwent TEP without fixation of mesh. Four patients were operated on while under spinal anesthesia and 2 patients while under general anesthesia. Mean operating time was 29.2±10.7 minutes. The mean pain scores were 2.33±0.52 at 24 hours and 1.33±0.52 after the first postoperative week. Mean hospital stay was 1.17±0.41 days. No patient had urinary retention or seroma formation in the postoperative period. There were no recurrences on follow-up (**Table 1**). None of the

Table 1.
Demographic Details and Follow-up

S. no	Age	Sex*	Side*	Operation Time (min)	Anesthesia (SA/GA)*	Pain Score† 24 hrs	Pain Score† 7 days	Hospital Stay (days)	Follow-up (months)	Recurrence
1	32	F	R	35	SA	2	1	1	39	No
2	25	F	L	35	SA	3	2	1	32	No
3	32	F	L	45	GA	2	1	2	26	No
4	70	F	L	20	GA	3	2	1	16	No
5	17	F	R	20	SA	2	1	1	15	No
6	27	F	L	20	SA	2	1	1	12	No

*F = female, R = right side, L = left side, SA = spinal anesthesia, GA = general anesthesia.

†1 = no pain, 2 = mild pain, 3 = moderate pain, 4 = severe pain and 5 = intolerable pain.

patients reported postoperative nausea, vomiting, or spinal headache.

DISCUSSION

Femoral hernia is much more common in females, with two-thirds of cases being reported in females.^{2,21} In our series, all the patients were females. Femoral hernia is associated with recurrence rates of 1% to 10%^{4,22} in primary cases and up to 22.2% in patients who have been operated on before for the same hernia.²³

Nerve irritation and chronic pain were common in early laparoscopic hernia repairs until anatomical studies defined the “triangle of doom” and “quadrangle of disaster” areas.²⁴ Still mesh fixation by metal staples leads to chronic pain in some patients.²⁵ Of late, studies of laparoscopic inguinal repair being done without fixation of mesh^{19,26} have been reported.

Similar to laparoscopic repair of inguinal hernias, laparoscopic repair of femoral hernias has distinct advantages over open repair. Laparoscopic repair is associated with low morbidity and early recovery.¹⁶ However, unlike inguinal hernias, laparoscopic repair in femoral hernias has 2 additional advantages. First, a significant proportion of femoral hernia patients have associated hernias, mostly inguinal, the incidence of 6% to 33% being reported in different studies.^{2,16,21,27} So these concomitant hernias can easily be diagnosed and repaired with the laparoscopic approach. Secondly, a proportion of femoral hernias develop in patients who have undergone previous open inguinal hernia repair.^{16,28} In the series reported by Yalamarthy et al,¹⁶ 46% of their patients with a femoral hernia had undergone previous open inguinal hernia repair. So the laparoscopic approach is preferred in patients who have undergone a previous open hernia repair.

Although femoral hernias have a higher incidence of obstruction and strangulation,^{1,4,6} studies demonstrate that laparoscopic repair can be successfully and safely done in acutely incarcerated femoral hernias.¹⁴

Open preperitoneal mesh repair for femoral hernias has been associated with low morbidity and recurrence rates of up to 1%.¹² Similar results have been reproduced for femoral hernias in laparoscopic total extraperitoneal (TEP) repair¹⁶ and transabdominal preperitoneal repair (TAPP).^{2,14,15} Laparoscopic surgery in all these studies was done with patients under general anesthesia (GA), and mesh fixation was done in most of them. As per our literature search, ours is the first study reporting laparoscopic femoral hernia repair with the patient under spinal

anesthesia (SA) and without fixation of mesh. Requirements of GA for TEP repair have several disadvantages compared with regional anesthesia, such as significant hemodynamic changes, delayed recovery, postoperative nausea and vomiting, increased cost, and the inability to operate in high-risk cardiopulmonary patients. One additional advantage of doing TEP repair with nonfixation of mesh with the patient under SA is that movements in the lower half of the patient’s body after SA are less compared with those with GA, at least for a few hours after the procedure. This helps in spontaneous adhesion of the mesh in tissue planes, especially when the mesh is not at all being fixed (with metal staples, suture, glue, and other means) as in our study. The feasibility and good results of TEP repair of femoral hernia done with the patient under SA and without fixation of mesh as shown in this study removes 2 distinct disadvantages attributed to TEP: need to fix the mesh and necessity of GA. This strengthens the case for laparoscopic femoral hernia repair as the first-line approach for treating femoral hernias.

The study has a few limitations. It is a small retrospective study without a control group. Prospective controlled studies with a larger number of patients are needed to substantiate the results of this study.

CONCLUSION

Laparoscopic TEP repair of femoral hernia done without fixation of the mesh with the patient under spinal anesthesia is feasible and safe.

References:

1. Hachisuka T. Femoral hernia repair. *Surg Clin North Am.* 2003;83:1189–1205.
2. Hernandez-Richter T, Schardey HM, Rau HG, Schildberg FW, Meyer G. The femoral hernia: an ideal approach for the transabdominal preperitoneal technique (TAPP). *Surg Endosc.* 2000;14:736–740.
3. Waddington RT. Femoral hernia: a recent appraisal. *Br J Surg.* 1971;58:920–922.
4. Naude GP, Ocon S, Bongard F. Femoral hernia: the dire consequences of a missed diagnosis. *Am J Emerg Med.* 1997;15:680–682.
5. Bekoe S. Prospective analysis of the management of incarcerated and strangulated inguinal hernias. *Am J Surg.* 1973;126:665–668.
6. Oishi SN, Page CP, Schwesinger WH. Complicated presentations of groin hernias. *Am J Surg.* 162:568–570, 1991; discussion 571.

7. Kemler MA, Oostvogel HJ. Femoral hernia: is a conservative policy justified? *Eur J Surg*. 1997;163:187–190.
8. Kulah B, Kulacoglu IH, Oruc MT, et al. Presentation and outcome of incarcerated external hernias in adults. *Am J Surg*. 2001;181:101–104.
9. McEntee GP, O'Carroll A, Mooney B, Egan TJ, Delaney PV. Timing of strangulation in adult hernias. *Br J Surg*. 1989;76:725–726.
10. Alimoglu O, Kaya B, Okan I, et al. Femoral hernia: a review of 83 cases. *Hernia*. 2006;10:70–73.
11. Gonullu NN, Alponat A, Cubukcu A. Open tension-free Cooper ligament repair for femoral hernia. *Int J Clin Pract*. 2005;59:1008–1010.
12. Nyhus LM. Classification of groin hernia: milestones. *Hernia*. 2004;8:87–88.
13. Swarnkar K, Hopper N, Nelson M, Feroz A, Stephenson BM. Sutureless mesh-plug femoral hernioplasty. *Am J Surg*. 2003;186:201–202.
14. Yau KK, Siu WT, Cheung YS, Wong CH, Chung CC, Li KW. Laparoscopic management of acutely incarcerated femoral hernia. *J Laparoendosc Adv Surg Tech A*. 2007;17:759–762.
15. Kapisris SA, Brough WA, Royston CM, O'Boyle C, Sedman PC. Laparoscopic transabdominal preperitoneal (TAPP) hernia repair. A 7-year two-center experience in 3017 patients. *Surg Endosc*. 2001;15:972–975.
16. Yalamarathi S, Kumar S, Stapleton E, Nixon SJ. Laparoscopic totally extraperitoneal mesh repair for femoral hernia. *J Laparoendosc Adv Surg Tech A*. 2004;14:358–361.
17. Molinelli BM, Tagliavia A, Bernstein D. Total extraperitoneal preperitoneal laparoscopic hernia repair using spinal anesthesia. *JLS*. 2006;10:341–344.
18. Lau H, Wong C, Chu K, Patil NG. Endoscopic totally extraperitoneal inguinal hernioplasty under spinal anesthesia. *J Laparoendosc Adv Surg Tech A*. 2005;15:121–124.
19. Moreno-Egea A, Torralba Martinez JA, Morales Cuenca G, Aguayo Albasini JL. Randomized clinical trial of fixation vs non-fixation of mesh in total extraperitoneal inguinal hernioplasty. *Arch Surg*. 2004;139:1376–1379.
20. Taylor C, Layani L, Liew V, Ghush M, Crampton N, White S. Laparoscopic inguinal hernia repair without mesh fixation, early results of a large randomised clinical trial. *Surg Endosc*. 2008;22:757–762.
21. Koontz AR. Femoral hernia; operative cases at the Johns Hopkins Hospital during a twenty-one-year period. *AMA Arch Surg*. 1952;64:298–306.
22. Jones RA. Femoral hernia following inguinal hernioplasty. *Am Surg*. 1966;32:725–732.
23. Bendavid R. Femoral hernias: primary versus recurrence. *Int Surg*. 1989;74:99–100.
24. van Mameren H, Go PM. Surgical anatomy of the interior inguinal region. *Consequences for laparoscopic hernia repair Surg Endosc*. 1994;8:1212–1215.
25. Kumar S, Wilson RG, Nixon SJ, Macintyre IM. Chronic pain after laparoscopic and open mesh repair of groin hernia. *Br J Surg*. 2002;89:1476–1479.
26. Garg P, Rajagopal M, Varghese V, Ismail M. Laparoscopic total extraperitoneal inguinal hernia repair with non fixation of the mesh in 1692 hernias. *Surg Endosc*. 2009;23:1241–5. Epub 2008 Sep 24.
27. Ekberg O, Lasson A, Kesek P, van Westen D. Ipsilateral multiple groin hernias. *Surgery*. 1994;115:557–562.
28. Mikkelsen T, Bay-Nielsen M, Kehlet H. Risk of femoral hernia after inguinal herniorrhaphy. *Br J Surg*. 2002;89:486–488.